

REMARKS

Reconsideration and allowance in view of the foregoing amendment and the following remarks are respectfully requested.

Claims 1, 2, 4, 6, 7, 10, 11, 18-22 and 24-44 are now pending.

Claims 1, 2, 4, 6, 7, 10, 11, 18-22, 26 and 29-32 were rejected under 35 USC 103(a) as being unpatentable over Mase in view of Suzuki. Applicant respectfully traverses this rejection.

As understood from Figure 2, boundary layer 10 provided in an embodiment of the invention is sandwiched between two solid electrolytic substrate layers and boundary layer 10 defines a partition between sample gas chamber 120 and an exterior of the sensor. Furthermore, as understood from Figure 11, boundary layer 10 is sandwiched between a solid electrolytic substrate layer 31 and an insulating layer substrate layer 42 so as to serve as a partition positioned between reference gas chamber 320 and the exterior of the sensor. In addition, as understood from Figure 12, boundary layer 102 is sandwiched between a solid electrolytic substrate layer 13 and an insulating substrate layer 24 so as to serve as a partition positioned between a reference gas chamber 140 and the outside of the sensor.

Claims 1 and 18 previously recited that the boundary layer has an average sintered particle size that is larger than that of the solid electrolytic substrate layer and that is larger than that of the insulating substrate layer. Claims 1 and 18 have been amended above to further characterize the boundary layer as a partition positioned between a gas chamber and an exterior of the substrate.

Similarly, new claim 33 specifies that the present invention is characterized in that the boundary layer has an average sintered particle size that is larger than that of the solid electrolytic substrate layers, and the boundary layer serves as a partition positioned between the sample gas chamber and the exterior of the sensor.

Mase et al (USP 4,861,456) discloses an alumina layer 54 which is made of the same material as the one being used for forming the insulation layer 20 (refer to col. 8, lines 11-12). The insulation layer 20 is characterized as porous (refer to col. 6, line 62). Thus, the alumina layer 54 is also porous. The insulation layer 34 of Mase et al is also porous. Although each of the aforementioned layers is characterized as porous, it is understood from Mase's disclosure that the respective layers define portion(s) of gas chamber walls. Thus, these porous layers are nevertheless gas-tight to maintain the integrity of the gas chamber (see attached schematic illustration).

Suzuki et al (USP 4,177,112) discloses coating layers 4 and 4'. However, these layers 4 and 4' are provided on an electrode 2 and, accordingly, are gas-permeable so as to allow the sample gas to penetrate, as understood from the function of oxygen concentration sensor 1 (see attached schematic illustration). In this respect, Suzuki et al discloses a gas permeable porous layer.

In view of the foregoing, it is clear that although both Mase and Suzuki disclose porous layers, there is a significant difference between the porous layer of Mase and that of Suzuki. Mase's layer must be gas-tight and Suzuki's layer must be gas permeable. The Examiner has suggested that it would be obvious to modify the boundary layer(s) of Mase in view of Suzuki. Applicant respectfully but strongly disagrees. Indeed, if Mase were modified, as suggested by the Examiner, to adopt characteristics of Suzuki's layer, the resulting product would presumably provide a "boundary" layer that has the characteristics of Suzuki's layer. As such, the layer would not be gas-tight and would not be suitable as a wall of a gas chamber.

It is clear that the initial burden of establishing a basis for denying patentability to a claimed invention rests upon the Examiner. In re Piasecki, 745 F. 2d 1468, 223 USPQ 785 (Fed. Cir. 1984). In establishing a *prima facie* case of obviousness under 35 U.S.C. § 103, it is incumbent upon the Examiner to provide a reason why one of ordinary skill in the art would have been led to arrive at the claimed invention from the prior art. Ex

parte Clapp, 227 USPQ 972 (BPAI 1985). To this end, the requisite motivation must stem from some teaching, suggestion or inference in the prior art as a whole or from the knowledge generally available to one of ordinary skill in the art and not from applicant's disclosure. See, for example, Uniroyal, Inc. v. Rudkin-Wiley Corp. 837 F.2d 1044, 7 USPQ 2d 1434 (Fed. Cir. 1988).

Rejections based on 35 USC §103 must rest on a factual basis with these facts being interpreted without hindsight reconstruction of the invention from the prior art. The Examiner has initial duty of supplying the factual basis for the rejection. The Examiner may not resort to speculation, unfounded assumption or hindsight reconstruction to supply deficiencies in the factual basis. See In re Wanery, 379 F.2d 1011, 1017, 154 USPQ 173, 177-78 (CCPA 1967).

In the present case, Mase fails to disclose that a "boundary" layer having an average sintered particle size that is larger than the neighboring layers. Suzuki on the other hand fails to disclose a "boundary" layer serving as a gas-tight partition. Because of the distinct characteristics of the layers of Mase and Suzuki, namely Mase's teaching of a gas-tight porous layer and Suzuki's teaching of a gas-permeable porous layer there is no motivation to modify Mase in view of Suzuki. Moreover, if Mase were modified in view of Suzuki, as suggested by the Examiner, to provide the Suzuki gas permeable layer therein, then the gas sensor of Mase would be destroyed as it would no longer be possible to determine the concentration of the gas because gas would leak from the chamber to the outside.

It is not proper under 35 USC 103 to modify a prior art patent in a manner which would destroy that on which the invention of the prior art patent was based. Ex parte Hartman, 186 USPQ 366,67 (PTO Bd. App. 1974).

In view of the foregoing, reconsideration and withdrawal of the Examiner's rejection are requested.


Claims 24 and 27 were rejected under 35 USC 103(a) as being unpatentable over Mase et al in view of Suzuki et al and Sugino and Tatumoto. These claims are submitted to be patentable over Mase and Suzuki for the reasons advanced above. The Examiner's further reliance on Sugino and Tatumoto does not overcome the deficiencies of the primary references noted above. It is therefore respectfully submitted that these claims should be allowable as well.

Claims 25 and 28 were rejected under 35 USC 103(a) as being unpatentable over Mase et al in view of Suzuki et al and Wakanabe et al or Ikezawa et al. Applicant respectfully traverses this rejection. These claims are submitted to be patentable over Mase and Suzuki for the reasons advanced above. The Examiner's further reliance on Wakanabe and Ikezawa does not overcome the deficiencies of the primary references noted above. It is therefore respectfully submitted that these claims should be allowable as well.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in condition for allowance and an early Notice to that effect is earnestly solicited.

Respectfully submitted,

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